

CLAIMS

What is claimed is:

1. A developer-supplying system for use in an image forming apparatus having a developer-storing part to store a developer, a photosensitive body to form a latent image, and a developer transfer body rotated to face the photosensitive body, to transfer the developer from the developer-storing part to the photosensitive body to form a visible image according to the latent image, comprising:

a developer-supplying member supplying the developer onto the developer transfer body and removing the residual developer which is not transferred onto the photosensitive body; and

a residual developer-withdrawing member disposed in a spaced-apart relation with and opposite to the developer-supplying member to withdraw the residual developer from the developer-supplying member.

2. The system according to claim 1, wherein the residual developer-withdrawing member comprises:

a roller part disposed in a spaced-apart relation with and opposite to the developer-supplying member; and

a withdrawal-electric field generating part generating a residual developer-withdrawing electric field between the developer-supplying member and the roller part to transfer the residual developer onto the roller part.

3. The system according to claim 2, wherein the roller part comprises a roller formed of a rubber material, or a sleeve formed of a metal material, or a roller formed of a metal material.

4. The system according to claim 2, wherein the roller part rotates in a same direction as a direction of rotation of the developer-supplying member.
5. The system according to claim 2, wherein the withdrawal-electric field generating part comprises a ground to ground the roller part to form the residual developer-withdrawing electric field between the developer-supplying member and the roller part.
6. The system according to claim 2, wherein the withdrawal-electric field generating part comprises a withdrawal-bias power source connected to the roller part, to apply a withdrawal-bias voltage thereto to form the residual developer-withdrawing electric field between the developer-supplying member and the roller part.
7. The system according to claim 2, further comprising:
 - a developer anti-incoming member preventing the developer from entering into a residual developer-withdrawing region of the developer-storing part in which the roller part of the residual developer-withdrawing member is disposed in a spaced-apart relation with the developer-supplying member; and
 - a cleaning member disposed at the developer anti-incoming member to contact the roller part to withdraw the residual developer from the developer-supplying member.
8. The system according to claim 7, wherein the developer anti-incoming member comprises a partition disposed in the developer-storing part over the residual developer-withdrawing region to prevent the developer from entering into the residual developer-withdrawing region, and defining the residual developer-withdrawing region.
9. The system according to claim 8, wherein the cleaning member comprises a

blade formed of a rubber material, and fixed at the partition to allow a top end thereof to contact the roller part.

10. The system according to claim 9, wherein the developer transfer body comprises a sleeve formed of a nonmagnetic material or a roller formed of a rubber material, wherein the developer-supplying member includes a roller formed of a foam rubber material.

11. An apparatus comprising:
a supplier to receive a developer and supply the developer to develop an electrostatic image; and
a withdrawing member spaced apart from the supplier to withdraw the developer not used to develop the electrostatic image from the supplier.

12. The apparatus according to claim 11, further comprising:
a developing unit to receive the developer from the supplier; and
a photosensitive body having the electrostatic image thereon to receive the developer from the developing unit, wherein the supplier receives the developer not used to develop the electrostatic image from the developing unit.

13. The apparatus according to claim 11, wherein the withdrawing member withdraws the developer remaining on the supplier after the electrostatic image is developed.

14. The apparatus according to claim 11, wherein the withdrawing member is spaced apart from the supplier by a predetermined gap.

15. The apparatus according to claim 11, further comprising an agitator to supply the

developer to the supplier.

16. The apparatus according to claim 15, further comprising a housing to contain the developer.

17. The apparatus according to claim 16, wherein the agitator comprises:
a rotating wing; and
an elastic seat attached to the wing to contact an inner surface of the housing.

18. The apparatus according to claim 12, wherein the withdrawing member comprises:
a roller to form a gap with the supplier; and
a field generating part to generate an electric field to attach the developer not used to develop the electrostatic image to the roller.

19. The apparatus according to claim 18, wherein the field generating part comprises a ground.

20. The apparatus according to claim 19, wherein a bias voltage is applied to the supplier, and the ground forms the electric field.

21. The apparatus according to claim 18, wherein the field generating part comprises a withdrawal bias power source to supply a withdrawal bias voltage to the roller.

22. The apparatus according to claim 21, wherein a bias voltage is applied to the supplier, and the withdrawal bias voltage forms the electric field.

23. An image forming device comprising:

a photosensitive unit to form a latent image thereon;

a developing unit to develop the latent image with a developer; and

a supply unit comprising:

a supplier to supply the developer to the developing unit and remove the developer from the developing unit that is not used to develop the latent image, and

a withdrawing member spaced apart from the supplier to withdraw the developer not used to develop the latent image from the supplier.

24. An apparatus comprising:

a supplier to receive a developer and supply the developer to develop an electrostatic image; and

a withdrawing member to withdraw the developer not used to develop the electrostatic image from the supplier, the withdrawing member not directly imparting a stress to the unused developer.